

What Is Claimed Is:

1. Apparatus for distal protection during a medical procedure, the apparatus comprising a vascular filter having a resiliently expandable foam body that defines one or more recesses adapted for capturing emboli.

2. The apparatus of claim 1 further comprising an elongated member having a distal region, wherein the vascular filter is coupled to the distal region.

3. The apparatus of claim 2, wherein the elongated member comprises a guide wire.

4. The apparatus of claim 1, wherein the foam comprises a sponge-like material having a multiplicity of pores.

5. The apparatus of claim 4, wherein the multiplicity of pores have a diameter greater than about 5 mm.

6. The apparatus of claim 5, wherein the pores have a diameter between 30 and 100 mm.

7. The apparatus of claim 6, wherein the pores have a diameter between 60 and 80 mm.

8. The apparatus of claim 1, wherein the foam comprises a foam fabricated from a material chosen from the group consisting of latex, silicone, polyethylene,

polyurethane, polycarbonate, polyvinyl chloride, polystyrene, polypropylene, polyester, and combinations thereof.

9. The apparatus of claim 1, wherein the vascular filter has a length that is greater than or equal to $1\frac{1}{2}$ times a maximum width of the filter.

10. The apparatus of claim 9, wherein the length of the vascular filter is greater than or equal to 2 times the maximum width of the filter.

11. The apparatus of claim 1 wherein the foam body defines a plurality of neighboring recesses and includes partitions disposed between the neighboring recesses.

12. The apparatus of claim 11 wherein the partitions have a line of union, the apparatus comprises an elongated member, and the filter is coupled to the elongated member along the line of union of the partitions.

13. The apparatus of claim 12 wherein the partitions taper proximal of the recesses.

14. The apparatus of claim 2, wherein the filter is longitudinally, but not rotationally, constrained with respect to the elongated member.

15. The apparatus of claim 1, wherein the filter is resiliently expandable from a collapsed delivery configuration adapted for use with a delivery

system, to an expanded deployed configuration adapted for engagement with the interior wall of a patient's vessel.

16. The apparatus of claim 15 further comprising a delivery system having a delivery sheath, the filter disposed in a collapsed delivery configuration within the delivery sheath.

17. The apparatus of claim 15 further comprising a delivery system having a removable suture, the suture disposed about the filter to maintain the filter in the delivery configuration.

18. The apparatus of claim 15, wherein a proximal end of the one or more recesses is closed when the filter is in the collapsed configuration, thereby preventing emboli captured within the recesses from escaping.

19. The apparatus of claim 2 further comprising a radiopaque feature coupled to the apparatus.

20. The apparatus of claim 2 further comprising an interventional device in communication with the apparatus.

21. The apparatus of claim 20, wherein the interventional catheter comprises a balloon catheter.

22. The apparatus of claim 1, wherein the filter further comprises a non-stick coating.

23. The apparatus of claim 22, wherein the non-stick coating is chosen from the group consisting of silicone and polytetrafluoroethylene.

24. A method for distal protection during a medical procedure, the method comprising:

providing apparatus comprising a vascular filter having a resiliently expandable foam body defining one or more recesses adapted for capturing emboli, the vascular filter coupled to an elongated member;

disposing the apparatus in a contracted delivery configuration;

advancing the apparatus to a target site within a patient's vessel; and

resiliently expanding the apparatus to an expanded deployed configuration in which the filter seals against an internal wall of the patient's vessel.

25. The method of claim 24, wherein disposing the apparatus in the contracted delivery configuration further comprises constraining the apparatus with a delivery system.

26. The method of claim 25, wherein constraining the apparatus with a delivery system further comprises positioning the apparatus within a delivery sheath.

27. The method of claim 25, wherein constraining the apparatus with a delivery system comprises constraining the apparatus with a removable suture.

28. The method of claim 25, wherein resiliently expanding the filter further comprises removing the delivery system from the filter.

29. The method of claim 24 further comprising:
providing an interventional device for performing a medical procedure, the interventional device having a guide wire lumen;

percutaneously and transluminally advancing the interventional device along the elongated member to a position within the patient's vessel proximal of the apparatus;

performing the medical procedure, the apparatus capturing emboli released during the procedure within the recesses of the vascular filter;

collapsing the apparatus within the guide wire lumen of the interventional device for retrieval; and

removing the interventional device and apparatus from the patient's vessel.

30. The method of claim 29, wherein the interventional device comprises a balloon catheter.

31. Apparatus for distal protection during a medical procedure, the apparatus comprising a vascular filter having a resiliently expandable body defining one or more recesses adapted for capturing emboli, wherein the body comprises a material selected from the group consisting of foam, resiliently elastic materials, rubber, silicone rubber, latex foam, urethane foam, sintered spheres, a hollow tube, or a thin-walled tube.

32. The apparatus of claim 31 further comprising a filter material attached to the resiliently expandable body to filter material passing into the one or more recesses.